Data Specifications for Quickbird

Science Data Purchase
DigitalGlobe

Parameter	Specification
Raw Image Scene Size (nominal at nadir)	16.5 km x 16.5 km
Minimum Order Quantity Per Data Acquisition	64 Sq Km for new acquisitions, (except for the basic image which is one scene) 25 Sq Km for archived data, (except for the basic image which is one scene)
Image File Format	Compatible with accepted image analysis packages such as ArcInfo, ERDAS Imagine, ENVI and ER Mapper. Any software as long as NASA can open.
Metadata File Format	Must meet 1995 Federal Geographic Data Committee (FGDC) content standard **See Note 2**
Tasking	The nominal time between placement of tasking request to first image acquisition shall be 5 days. Notifications of scheduled acquisition must be provided 1 day in advance; Must accommodate single day acquisition windows.
Data compression	Specify type and level of compression used, if any, and associated losses (e.g., by statistical performance on test scenes).
Average Time to Process	< 5 days from receipt of data from archive or new collection to ship date. The data delivery time shall not exceed 15 days. (Based on North American delivery, single product order, non-ortho, without ground control.)
Revisit Frequency	< 6 days at 0.72-meter intrinsic GSD for pan imagery (excluding low sun angle passes due to seasonal effects).
Scene View Angle	Data must be available for multiple viewing angles.
Spectral Band Pass Accuracy (at all field angles)	Band edge points at 50% peak response shall be within +/-0.01 microns. Multispectral slope through the 50% point shall be at least 20%/0.02 microns Out-of-band filter response <5% of total integrated transmittance within 5% transmission points of that band. Panchromatic to multispectral image registration shall be 0.5 multispectral pixel or better. Intrinsic band-to-band registration shall be 0.5 multispectral pixel or better.
Radiometric Accuracy and Stability	Absolute Radiometric Accuracy to within ± 10%, where absolute accuracy is relative to a known truth or NIST-traceable source. Relative Radiometric Accuracy to within ± 5%, where relative accuracy refers to both band-to-band and pixel-to-pixel accuracy. Linearity to within ±5.0% of exposure from 5% of maximum irradiance to 100% of maximum irradiance. Raw imagery must have no significant and reasonably uncorrectable effects due to banding, streaking, or pixel outages.

Image Quality (at all field angles)	At zero spatial frequency the SNR will be greater than 60 for the pan, green, red, and NIR bands and greater than 40 for the blue band, based on a 20% target reflectance, with a scene illumination, atmospheric attenuation, and path radiance background calculated from a MODTRAN mid-latitude summer model with 30 degrees solar elevation angle and a 23 km visibility due to aerosols. Edge quality associated with the pan band will provide a MTF of 0.09 or greater at Nyquist frequency. Edge quality associated with each MSS band will provide a MTF of 0.20 or greater at Nyquist frequency.

Parameter	Panchromatic Specification	Multispectral Specification
Image Ground Sample Distance (GSD)	< 0.82 meter GSD in both cross-track and along-track directions (best nadir GSD 0.62 meter, varying up to approximately 0.66 meter due to orbit tolerances)	< 3.28 meter GSD in both cross-track and along-track directions (best nadir GSD 2.48 meters, varying up to approximately 2.64 meters due to orbit tolerances)
Data Quanitization	11 bit	11 bit
Spectral Band Pass (pan)	0.45 - 0.90 microns	N/A
Spectral Band Pass (blue)	N/A	0.45 - 0.52 microns
Spectral Band Pass (green)	N/A	0.52 - 0.60 microns
Spectral Band Pass (red)	N/A	0.63 - 0.69 microns
Spectral Band Pass (NIR)	N/A	0.76 - 0.90 microns
Absolute Horizontal Geometric Accuracy	23 m circular error or better 90% confidence	
Projection/Datum	UTM/WGS84	
Cloud Cover	< 20 % **See Note 1**	
Resampling Method	Must be able to select any of the following: Nearest Neighbor 8 pt sinc 2x2 Bilinear 4x4 Cubic Convolution	
Sidelap and Endlap	Nominally ~1 km	Nominally ~1 km

* NOTE 1: The nominal specification for cloud cover is less than 20%. NASA will conduct a review of any imagery received to determine if the research objectives have been satisfied. DigitalGlobe shall provide its "best effort" in resolving issues with imagery provided to NASA in which the research objectives have not been met.

* NOTE 2: DigitalGlobe shall support FGDC format standards within one year from Initial Operating Capability (IOC). Additionally, any data sent to NASA not in the correct format shall be reformatted by DigitalGlobe (at no cost to NASA) upon DigitalGlobe gaining FGDC capability.